WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Sunday, May 16, 2004

Hide?	Set Name	Query	Hit Count
		DB=USPT; PLUR=YES; OP=ADJ	
☐	L12	l11 and l10	2
☐	L11	(4849706| 5007068| 5017883| 5379323)![pn]	4
☐	L10	(3668291| 3818143| 3838296| 3967069| 4184052| 4481640| 4546389| 4740997| 4755761| 4809203| 4893316| 4965797| 4965810| 4974058| 5007068| 5045789| 5227987| 5379323| 5541966)![pn]	19
☐	L9	5828707[uref]	2
☐	L8	5828707[uref]	2
☐	L7	6127884[uref]	3
☐	L6	6127884[uref]	3
☐	L5	L4 near15 l1	19
☐	L4	differential near5 detect$	20043
☐	L3	L2 near15 multipl$	55
☐	L2	L1 near5 delay$	275
☐	L1	in$1phase near5 quadrature	7044

END OF SEARCH HISTORY

First Hit Fwd Refs

Generate Collection

L5: Entry 11 of 19 File: USPT Oct 27, 1998

DOCUMENT-IDENTIFIER: US 5828707 A
TITLE: Differential detecting apparatus for detecting phase difference of phase-modulated signal

CLAIMS:

1. A differential detecting apparatus for generating a demodulated baseband signal of a phase-modulated signal from an inphase baseband signal and a quadrature-phase baseband signal which are obtained by performing a quadrature detection on the phase-modulated signal, wherein the demodulated baseband signal represents a phase difference between two symbols of the phase-modulated signal with certain symbol times in between, wherein a symbol time corresponds to a symbol which is a unit piece of information of the phase-modulated signal, the differential detecting apparatus comprising:

a first sampler for sampling and digitizing the inphase baseband signal at intervals of a sampling cycle shorter than one symbol time;

a second sampler for sampling and digitizing the quadrature-phase baseband signal at intervals of a sampling cycle shorter than one symbol time, wherein the first sampler and the second sampler synchronize with each other in operation;

differential detection calculating means including

a cosine component calculating unit for alternately calculating and outputting, as first detection data, first inphase data multiplied by second inphase data and first quadrature-phase data multiplied by second quadrature-phase data at intervals of the sampling cycle, wherein the first inphase data and the second inphase data are both output from the first sampler and the first inphase data is output earlier than the second inphase data by the certain symbol times, and wherein the first quadrature-phase data and the second quadrature-phase data are both output from the second sampler and the first quadrature-phase data is output earlier than the second quadrature-phase data by the certain symbol times, and

a sine component calculating unit for alternatively calculating and outputting, as second detection data, the first inphase data multiplied by the second quadrature-phase data and the first quadrature-phase data multiplied by the second inphase data at intervals of the sampling cycle;

a first post-detection filter for generating a first component by performing digital signal processing on the first detection data using the following formula of transfer function H1(z) ##EQU5## where .alpha. and .beta. are constants, and i and k integers; and a second post-detection filter for generating a second component by performing the digital signal processing on the second detection data using the formula of transfer function H1(z), wherein the first component and the second component make up the demodulated baseband signal.

17. A differential detecting apparatus for generating a demodulated baseband signal of a phase-modulated signal from an inphase baseband signal and a quadrature-phase baseband signal which are obtained by performing a quadrature detection on the

phase-modulated signal, wherein the demodulated baseband signal represents a phase difference between two symbols of the phase-modulated signal with certain symbol times in between, wherein a symbol time corresponds to a symbol which is a unit piece of information of the phase-modulated signal, the differential detecting apparatus comprising:

a first sampler for sampling and digitizing the inphase baseband signal at intervals of a sampling cycle shorter than one symbol time;

a second sampler for sampling and digitizing the quadrature-phase baseband signal at intervals of a sampling cycle shorter than one symbol time, wherein the first sampler and the second sampler synchronize with each other in operation;

differential detection calculating means including

a cosine component calculating unit for alternately calculating and outputting, as first detection data, first inphase data multiplied by second inphase data and first quadrature-phase data multiplied by second quadrature-phase data at intervals of the sampling cycle, wherein the first inphase data and the second inphase data are both output from the first sampler and the first inphase data is output earlier than the second inphase data by the certain symbol times, and wherein the first quadrature-phase data and the second quadrature-phase data are both output from the second sampler and the first quadrature-phase data is output earlier than the second quadrature-phase data by the certain symbol times, and

a sine component calculating unit for alternatively calculating and outputting, as second detection data, the first inphase data multiplied by the second quadrature-phase data and the first quadrature-phase data multiplied by the second inphase data at intervals of the sampling cycle;

a first post-detection filter for generating a first component by performing digital signal processing on the first detection data, wherein the first post-detection filter includes a linear interpolation filter and an integral filter;

a second post-detection filter for generating a second component by performing digital signal processing on the second detection data, wherein the second post-detection filter includes a linear interpolation filter and an integral filter, wherein the first component and the second component make up the demodulated baseband signal.

First Hit Fwd Refs

Generate Collection

L5: Entry 2 of 19 File: USPT Jan 6, 2004

DOCUMENT-IDENTIFIER: US 6674998 B2
TITLE: System and method for detecting and correcting phase error between differential signals

Brief Summary Text (2):
The present invention relates to modulation techniques, and more particularly to phase error detection and correction of phase error between differential signals, such as in-phase and quadrature phase carrier signals of a quadrature oscillator.

Generate Collection

L5: Entry 6 of 19 File: USPT Apr 8, 2003

DOCUMENT-IDENTIFIER: US 6546237 B1
TITLE: Differential FM detector for radio receivers

Abstract Text (1):
A differential FM detection of signals uses in-phase and quadrature phase signal components of a received signal in the detection process, wherein the in-phase and quadrature phase signal components are at a low intermediate frequency (IF). The in-phase and quadrature phase signal components are each amplitude limited, sampled at a prescribed sampling rate and filtered in a prescribed manner. Delayed versions of the filtered in-phase and quadrature phase signal components are generated and, then, signal products are generated of the delayed in-phase signal component and quadrature phase signal component, and the delayed quadrature phase signal component and in-phase signal component. The algebraic difference of the generated signal products is obtained to yield the desired data signal, e.g., symbols. Specifically, a FIR (finite impulse response) filter is employed to filter the limited and sampled versions of the in-phase and quadrature phase signal components to alleviate the interference caused by the limiter. In an embodiment of the invention, the detector is a differential Continuous Phase Frequency Shift Keyed (CPFSK) FM detector. In a GFSK differential FM detector, employing a post detection compensation arrangement significantly reduces distortion caused by ISI. Specifically, the absolute value of the detected data signal is obtained and compared to a prescribed threshold value. If the threshold is exceeded no compensation is required. However, if the threshold is not exceeded, it is assumed that prescribed data symbol transitions have occurred and that the currently received data symbol is the inverse of the last preceding detected data symbol. Consequently, the current data symbol is replaced by the inverse of the preceding data symbol.

Brief Summary Text (9):
These and other problems and limitations of prior known arrangements for differential FM detection of signals are realized in a differential FM detector that uses in-phase and quadrature phase signal components of a received signal, wherein the in-phase and quadrature phase signal components are at a low intermediate frequency (IF). Both the in-phase and quadrature phase signal components are amplitude limited, sampled at a prescribed sampling rate and filtered in a prescribed manner. Delayed versions of the filtered in-phase and quadrature phase signal components are generated and, then, signal products are generated of the delayed in-phase signal component and quadrature phase signal component, and the delayed quadrature phase signal component and in-phase signal component. The algebraic difference of the generated signal products is obtained to yield the desired data signal, e.g., symbols.

CLAIMS:

1. A. differential FM detector for use in a receiver in which in-phase (I) and quadrature phase (Q) signal components of a received signal in a prescribed modulation format are available comprising: a first limiter for limiting the amplitude of said I signal component to yield a limited version of said I signal component; a second limiter for limiting the amplitude of said Q signal component to yield a limited Q signal component; a first sampler for sampling at a prescribed

sampling rate the limited I signal component to obtain a limited and sampled version of said I signal component; a second sampler for sampling at said prescribed sampling rate the limited Q signal component to obtain a limited and sampled version of said Q signal component; a first filter having a prescribed characteristic for filtering said limited and sampled version of said I signal component to yield a filtered version of said limited and sampled I signal component; a second filter having said prescribed characteristic for filtering said limited and sampled version of said Q signal component to yield a filtered version of said and sampled Q signal component; a first delay unit for delaying said fillered version of said limited and sampled I signal component by a prescribed interval; a second delay unit for delaying said filtered version of said limited and sampled Q signal component by said prescribed interval; a first multiplier supplied with said filtered version of said limited and sampled I signal component and an output from said second delay unit for generating a first product signal; a second multiplier supplied with said filtered version of said limited and sampled Q signal component and an output from said first delay unit for generating a second product signal; and an algebraic difference unit supplied with said first and second product signals for generating an output data signal representative of the algebraic difference of said second product signal and said first product signal, whereby harmonics and interference caused by said first and second limiters and said first and second samplers is significantly reduced and thereby reducing the detector bit error rate.

Generate Collection

L5: Entry 8 of 19 File: USPT Dec 5, 2000

DOCUMENT-IDENTIFIER: US 6157235 A
TITLE: Quadrature signal generator and method therefor

Abstract Text (1):
A quadrature generator (100) includes a phase detector (125) having a set of differential inputs for coupling in-phase and quadrature signals (114,116) and a set of differential outputs for providing a phase error signal (135). Switches (122,127) are associated with the set of input terminals and with the set of output terminals. The switches (122,127) are synchronously controlled to switch around the signals at the input terminals and at the output terminals in concert, and in rapid succession. The operation of the switches (122,127) eliminates or reduces the effects of imperfections within the parallel paths of the phase detector circuitry (125), in order to produce a more accurate phase deviation signal.

Detailed Description Text (3):
Generally, the present invention provides for a quadrature generator that includes a phase detector having a set of differential input terminals for coupling in-phase and quadrature signals and a set of differential output terminals for providing a phase error signal. Switches are associated with the set of input terminals and with the set of output terminals. The switches are synchronously controlled to switch around the signals at the input terminals and at the output terminals in concert, and in rapid succession. The operation of the switches eliminates or reduces the effects of imperfections within the parallel paths of the phase detector circuitry, in order to produce a more accurate phase deviation signal.

CLAIMS:

6. A quadrature signal generator, comprising:

phase detection circuitry having a set of differential inputs for coupling in-phase (I) and quadrature (Q) signals, and a set of differential outputs for providing a phase error signal; and

first and second switching apparatus associated with the set of differential inputs, and with the set of differential outputs, respectively, the first and second switching apparatus being responsive to a control signal to switch signals at the set of differential inputs and at the set of differential outputs, in concert, to reduce phase detection errors due to mismatches within the phase detection circuitry.

First Hit Fwd Refs

Generate Collection

L5: Entry 9 of 19 File: USPT Oct 3, 2000

DOCUMENT-IDENTIFIER: US 6127884 A
TITLE: Differentiate and multiply based timing recovery in a quadrature demodulator

Detailed Description Text (6):
The receiver 3 further comprises sampling means 60 for sampling the in-phase and quadrature signals I and Q so as to produce respective in-phase signal and quadrature samples I(k) and Q(k), and a differential detector 61 coupled to the sampling means 60. The sampling means 60 comprises respective analog-to digital converter 63, and sampling control means 64 and 65 controlling sampling at a rate of t=kT, t being time, k being an integer value, and T being a sampling period. The differential detector 61 provides two bits x.sub.k and y.sub.k per differentially detected received symbol Sy in the received quadrature modulated signal Rx, according to the differential equations:

First Hit Fwd Refs

Generate Collection

L5: Entry 9 of 19 File: USPT Oct 3, 2000

DOCUMENT-IDENTIFIER: US 6127884 A
TITLE: Differentiate and multiply based timing recovery in a quadrature demodulator

Detailed Description Text (6):
The receiver 3 further comprises sampling means 60 for sampling the in-phase and quadrature signals I and Q so as to produce respective in-phase signal and quadrature samples I(k) and Q(k), and a differential detector 61 coupled to the sampling means 60. The sampling means 60 comprises respective analog-to digital converter 63, and sampling control means 64 and 65 controlling sampling at a rate of t=kT, t being time, k being an integer value, and T being a sampling period. The differential detector 61 provides two bits x.sub.k and y.sub.k per differentially detected received symbol Sy in the received quadrature modulated signal Rx, according to the differential equations:

First Hit Fwd Refs

Generate Collection

L8: Entry 2 of 2 File: USPT Apr 30, 2002

US-PAT-NO: 6381288
DOCUMENT-IDENTIFIER: US 6381288 B1

TITLE: Method and apparatus for recovering data from a differential phase shift keyed signal